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(71) Applicant: NORDICA S.p.A.
I-31040 Trevignano (Treviso) (IT)

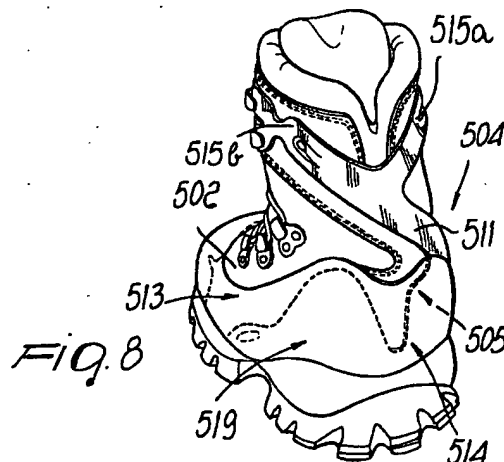
(72) Inventors:
• Perotto, Riccardo
31040 Volpago del Montello, Treviso (IT)

• Pamio, Cecilia
31100 Treviso (IT)
• Foffano, Massimo
31100 Treviso (IT)

(74) Representative: Modiano, Guido, Dr.-Ing. et al
Modiano & Associati S.r.l.
Via Meravigli, 16
20123 Milano (IT)

(54) Ankle supporting device, particularly for sports shoes

(57) An ankle supporting device, particularly usable in sports shoes having an upper or an innerboot (502), provided with padding, and a sole. The device is constituted by a structural element that includes a counter (505) that affects at least the regions of the heel and of the plantar arch; a wing (511) protrudes from the counter and is associated with the upper affecting the lateral rear regions of the foot. The device allows to protect the ankle against possible sprains caused by excessively angled movements and in particular for wide lateral flexing angles.



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Description

The present invention relates to an ankle supporting device, particularly usable in sports shoes of the type constituted by an upper associated with a sole. Although these conventional shoes allow good comfort, they do not support the foot adequately, because they allow lateral flexings of the ankle that cause sprains during sports practice.

It is also known to use stiffening structures that are applied to the sports shoe. Italian utility model No. 198,079 discloses a form-fitting insole that includes the toe unit and the heel and comprises a form-fitting arch support that is associated with a toe unit and with a heel that are formed monolithically together with the arch support by injecting plastic material in a mold. The arch support has regions that have different thickness and rigidity, as well as channels with reduced thickness to contain stitching lines and grooves that are adapted to accommodate blades for stiffening and/or connecting auxiliary external fixtures for the shoe.

Italian patent No. 1,189,716, discloses a method for producing shoes comprising a first step for preforming semifinished items, followed by a second step of assembling a preformed rigid or semirigid form-fitting inner sole that includes a toe unit and a counter on a preformed lining or soft innerboot, followed by a third stage for the assembly of a preformed upper on the form-fitting inner sole, embedding said soft innerboot or lining.

This is followed by a fourth step, during which a sole is positioned on the prepared bottom of the upper, and by a fifth stage, in which glues spread beforehand are activated, associating the various components.

These solutions allow to obtain a shoe that has high rigidity located exclusively in the lower part of the shoe; this rigidity can be quantified as a function of the thickness and of the material used for stiffening.

Although these solutions ensure optimum rigidity of the insole, they leave the task of supporting the remaining surface of the foot, and particularly the ankle region, exclusively to the soft upper.

It has been observed that during sports practice the ankle is exposed at all times to the danger of sprains or dislocations caused by considerable lateral flexings.

US-2,972,822 discloses an ankle supporting means that is constituted by a first element, which has a ring-like shape and is associated laterally to the upper, and by a second element, which also has a ring-like shape that can be superimposed on the shape of said first element and also has a toothed region.

The first and second elements, in the common ring-shaped configuration, are placed at the malleolar region and can slide with respect to each other.

There are also means to allow the connection of the first element to the upper as well as means for mutually connecting the first element to the second element and the second element to the shoe, particularly to the heel.

This solution stiffens only the ankle portion by

means of a mechanical solution that is complicated because it is constituted by a plurality of elements that must be connected to each other and to the shoe.

It is also noted that the forces produced with excessively angled movements of the ankle, which cause sprains and dislocations, are cushioned exclusively by the ankle supporting means that is located at the ankle. From the anatomical point of view, however, lateral flexing of the ankle is still allowed, although the plantar arch region or the sole of the foot, for example, does not move at the supporting surface, and all this again causes possible sprains or dislocations.

Finally, this solution, by comprising several rigid elements that are connected to each other and to the upper, does not allow to achieve a good fit for the user.

EP-0 309 437 discloses a sports shoe provided with a stiffening insert that surrounds the ankle region and has a front opening, a rear opening, and a lower opening.

However, this solution, too, has the drawback mentioned above, since it protects the ankle against possible impacts but does not prevent it from being subjected to lateral flexing angles with respect to the remaining part of the foot and thus cause sprains during sports practice.

The aim of the present invention is to solve the described technical problems, eliminating the drawbacks of the mentioned prior art, by providing a device that allows optimum support of the ankle, distributing over multiple parts of the foot any forces that are generated in case of excessively angled movements of the ankle and particularly for wide lateral flexing angles, so as to prevent any sprains of the ankle.

Within the scope of the above aim, an important object is to provide a device that is structurally simple.

Another important object is to provide a device that can be easily industrialized.

Another object is to provide a device that allows to achieve easy and quick assembly of the shoe.

Another object is to provide a device that is reliable and safe in use and can be manufactured with conventional machines and equipment.

This aim, these objects, and others which will become apparent hereinafter are achieved by an ankle supporting device, particularly for sports shoes comprising an upper or an innerboot, provided with padding, and a sole, characterized in that it comprises a structural element comprising a counter that affects at least the regions of the heel and of the plantar arch, at least one wing protruding from said counter and being associable with said upper or innerboot, said wing affecting the lateral rear regions of the foot.

Further characteristics and advantages of the invention will become apparent from the detailed description of some particular but not exclusive embodiments, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is an exploded perspective view of the shoe

according to the invention;

figure 2 is a rear view of the assembled shoe of figure 1;

figure 3 is a side view of the assembled shoe of figures 1-2;

figures 4, 5, 6, 7, and 8 are rear perspective views of further embodiments of the shoe with the ankle supporting device applied thereto;

figure 9 is a side view of the shoe of figure 8.

With reference to the above figures, the reference numeral 1 designates a sports shoe constituted by an upper or innerboot 2, optionally provided with padding, and by a sole 3.

The ankle supporting device, designated by the reference numeral 4, is constituted by a structural element that can be arranged outside or inside the upper or innerboot 2 or inside the padding.

Said structural element can be produced preferably by injecting plastics in a mold, so that it can have regions having diverse thickness and rigidity.

The structural element is substantially constituted by two components; the first one is a counter, designated by the reference numeral 5, that affects at least the heel region 6 and the plantar arch region 7.

In the solution shown in figure 1, counter 5 also affects the front region 8 of the sole of the foot, so as to give counter 5 a shape that can be likened to an insole.

The execution by injecting plastics in a mold allows to optionally provide, on counter 5, channels or regions 9 having a reduced thickness to contain lines for stitching to the upper or innerboot 2 or to sole 3.

It is also possible to provide, at the counter 5, adapted first seats 10 that are formed longitudinally to accommodate blades for stiffening and/or for connecting external or auxiliary components for the shoe.

In the embodiment illustrated in figure 1, the supporting device, and therefore the structural element, can be interposed between the upper or innerboot 2 and sole 3; these two parts can be optionally coupled either by stitching or gluing or overlap injection-molding of plastics.

The supporting device and therefore the structural element are also constituted by at least one wing 11 that is rigidly coupled to counter 5 and protrudes laterally from it preferably at the plantar arch region 7.

Wing 11, which is associable with the upper or innerboot 2, has a first portion 12 that affects the inner lateral region 13 of the shoe up to the rear region 14 thereof.

At this region, wing 11 splits so as to form a second portion 15a and 15b that surrounds both lateral regions 13 of the shoe from rear region 14.

Advantageously, it is possible to associate adapted preferably V-shaped flaps 16a and 16b with the tips of second portion 15a and 15b. Retention elements, such as hooks or eyelets 17, for laces 18, are associated for example at the flaps.

Wing 11 thus surrounds the malleolar region in a

nonrigid manner, allowing the ankle to move in an absolutely natural manner; at the same time, the supporting device prevents the ankle from performing sharp movements that are excessively angled toward the inside or the outside of the foot, since the modification of the thickness of the structural element, as a function of the efforts and tensions that act on the various parts of the ankle, allows to achieve optimum spreading of the forces produced by the elastic characteristics of the material.

It is also possible to use different materials to produce the structural element, thus allowing to vary the rigidity and lateral containment according to the specific requirements linked to the type of sports practice.

In this regard, more rigid materials will be used for climbing boots and softer materials will be used for walking shoes.

The structural element essentially ensures optimum rigidity in the malleolar region by means of the connection between counter 5 and wing 11, which in case of excessively angled movements of the ankle is subjected to a traction or compression force that is transmitted to counter 5, which is consequently subjected to a torsion force.

Cooperation between counter 5 and wing 11 thus allows more effective distribution of the forces that affect the shoe and particularly of those that act on the ankle.

It has thus been observed that the invention has achieved the intended aim and objects, a device having been provided which allows to achieve optimum ankle support, distributing in an optimum manner the forces caused by lateral flexings of the ankle over wide angles, thus eliminating possible spraining thereof because the counter 5 is also subjected to torsion.

The device is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

Thus, for example, figure 4 illustrates an embodiment in which the supporting device 104 comprises two wings 111a and 111b that are connected by means of first portions 112a and 112b, each of which protrudes from the counter 105 in the inner and outer lateral regions 113 of the foot until it joins to the second portion 115a and 115b at the rear region 114.

Figure 5 illustrates another embodiment of the supporting device 204, in which two wings 211a and 211b protrude from counter 205, starting from plantar arch region 207, and are arranged mutually opposite at the rear region 214 without mutually joining thereat. The wings are directly connected to the second portion 215a and 215b.

Figure 6 illustrates a supporting device 304, in which wing 311 protrudes from counter 305 from a lateral region 313, which is adjacent to rear region 314, instead of from plantar arch region 307.

First portion 312 of wing 311 thus splits in two at rear region 314 in second portion 315a and 315b.

Figure 7 illustrates another embodiment for a supporting device 404 that is again constituted by a counter

405, with which a wing 411 is associated. The wing protrudes from the counter at rear region 414 along a median longitudinal plane of said shoe so as to form a first portion 412 that splits in two at one end to form a second portion 415a and 415b that laterally surrounds the upper or innerboot 402. Figures 8 and 9 illustrate another embodiment for a supporting device 504, which comprises a counter 505 that is covered, in the lateral region 513 and in the rear region 514, by a border 519 that is perimetrically associated with the upper or innerboot 502 so as to constitute an additional reinforcement element.

A wing 511 is associated with counter 505 and has a second split portion 515a, 515b surrounding the sides of upper 502.

Second split portion 515a, 515b is provided with eyelets 517 for connection to laces 518.

The materials and the dimensions that constitute the individual components of the device may of course be the most pertinent according to the specific requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An ankle supporting device, particularly for sports shoes comprising an upper or an innerboot (2,102,202,302, 402,502), provided with padding, and a sole (3,103,203,303,403), characterized in that it comprises a structural element comprising a counter (5,105,205,305,405, 505) that affects at least the regions of the heel (6) and of the plantar arch (7), at least one wing (11,111,211,311, 411,511) protruding from said counter and being associable with said upper or innerboot, said wing affecting the lateral rear regions of the foot (13).
2. A device according to claim 1, characterized in that said structural element can be arranged inside or outside said upper or innerboot or inside said padding and is produced by injecting plastic material in a mold so as to form desired regions that have diverse thickness and rigidity.
3. A device according to claim 1, characterized in that said structural element is constituted by two components, the first one being said counter (5) affecting at least the heel and plantar arch regions.
4. A device according to claim 3, characterized in that said counter (5) also affects the front region of the sole of the foot so as to give said counter a shape that can be likened to an insole.
5. A device according to claim 4, characterized in that said at least one wing (11) protrudes laterally with respect to said counter (5), at said plantar arch region (7).
6. A device according to claim 5, characterized in that said at least one wing (11) has a first portion (12) that affects the inner lateral region (13) of said shoe up to the rear region (14) thereof.
7. A device according to claim 6, characterized in that in said rear region (14), said at least one wing (11) splits in two so as to form a second portion (15a,15b) that surrounds both lateral regions (13) of said shoe from said rear region (14).
8. A device according to claim 7, characterized in that adapted V-shaped flaps (16a,16b) are associable with the tips of said second portion (15a,15b), retention elements, such as hooks or eyelets (17), for laces (18), being associated with said flaps.
9. A device according to claim 1, characterized in that it comprises two wings (111a,111b) that are connected by means of first portions (112a,112b), each of which protrudes from said counter (105) in said inner and outer lateral regions (113) of the foot, until they join a second portion (115a,115b) at said rear region (114).
10. A device according to claim 1, characterized in that two wings (211a,211b) protrude from said counter (205), starting from said plantar arch region (207), are arranged mutually opposite at said rear region (214), without joining thereat, and are connected directly to a second portion (215a,215).
11. A device according to claim 1, characterized in that said at least one wing (311) protrudes from said counter (305) starting from said lateral region (313) that is adjacent to said rear region (314).
12. A device according to claim 11, characterized in that said first portion (312) of said at least one wing (311) splits in two, at said rear region (314), in a second portion (315a,315b).
13. A device according to claim 1, characterized in that said wing (411) protrudes from said counter (405) at said rear region (414) along a longitudinal median plane of said shoe so as to form a first portion (412) that splits in two at one end so as to form a second portion (415a,415b) that laterally surrounds said upper or innerboot (402).
14. A device according to claim 1, characterized in that said counter (505) is covered, in the lateral regions (513) and in the rear region (514), by a border (519) that is perimetrically associated with said upper or

innerboot (502) so as to constitute a reinforcement element.

15. A device according to claim 1, characterized in that it can be interposed between said upper or inner-
boot and said sole and in that it can be coupled thereto either by stitching or by gluing or by overlap injection-molding of plastics.

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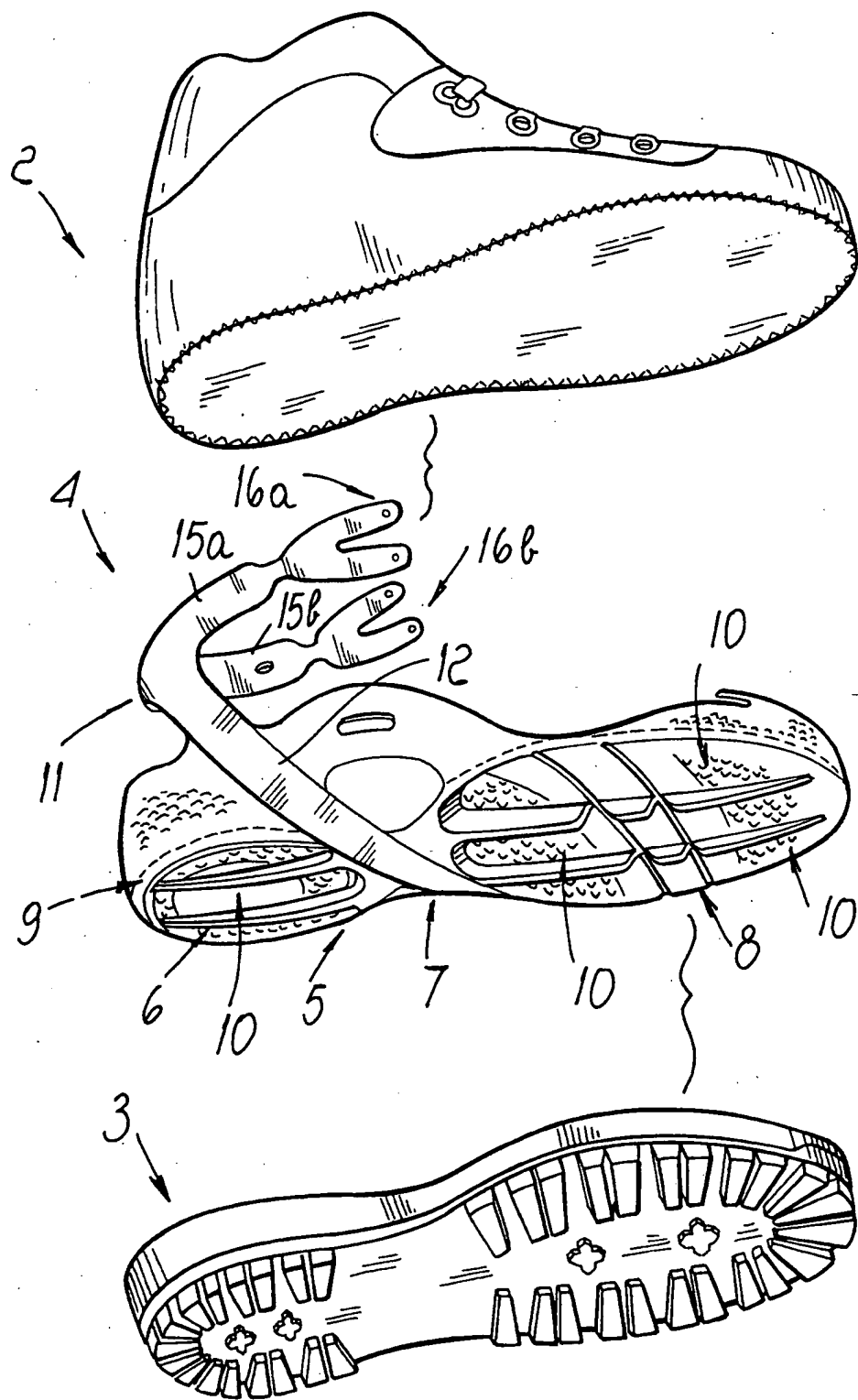


Fig. 1

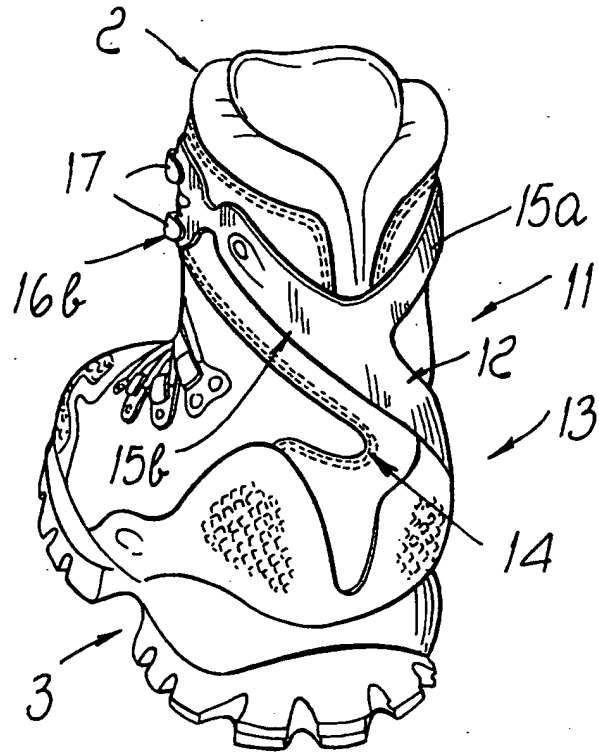


Fig. 2

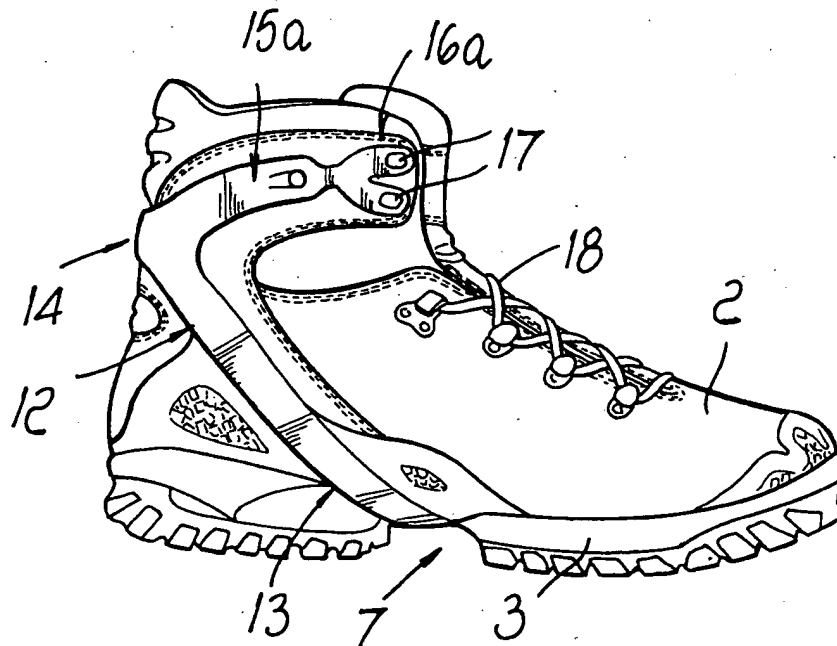


Fig. 3

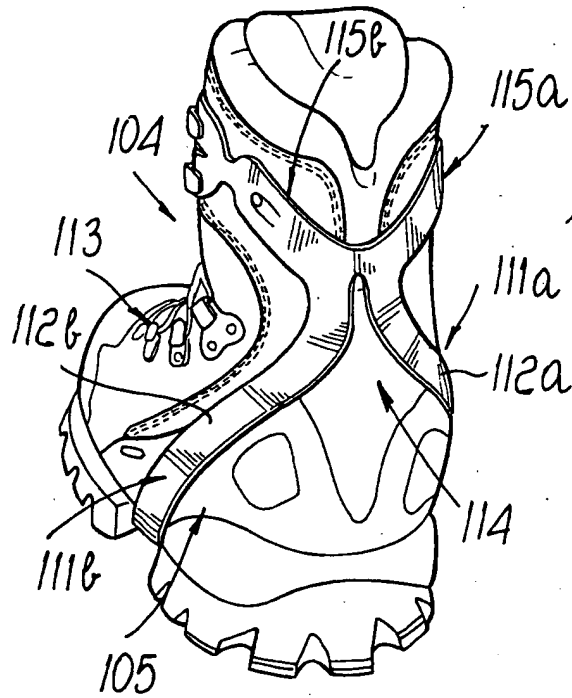


Fig. 4

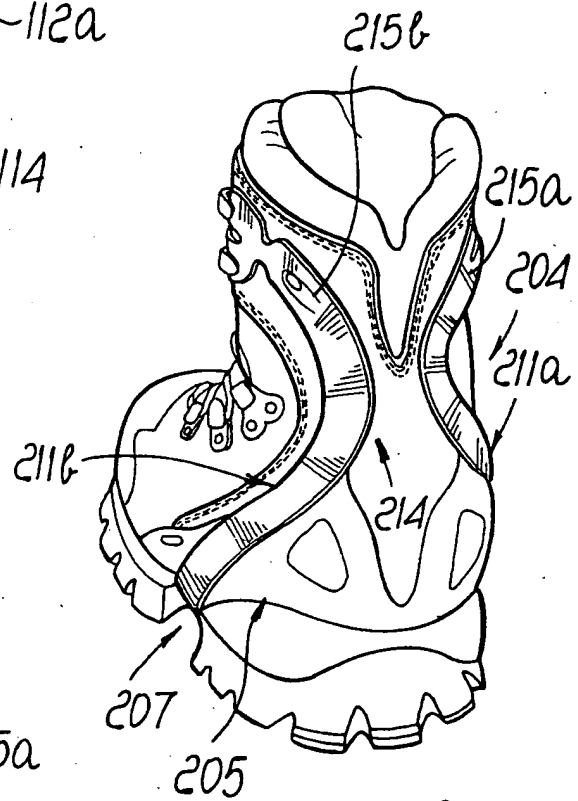


Fig. 5

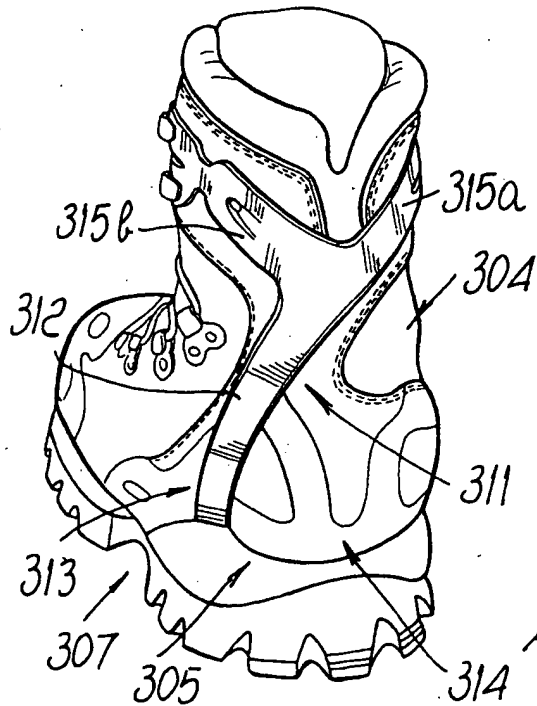
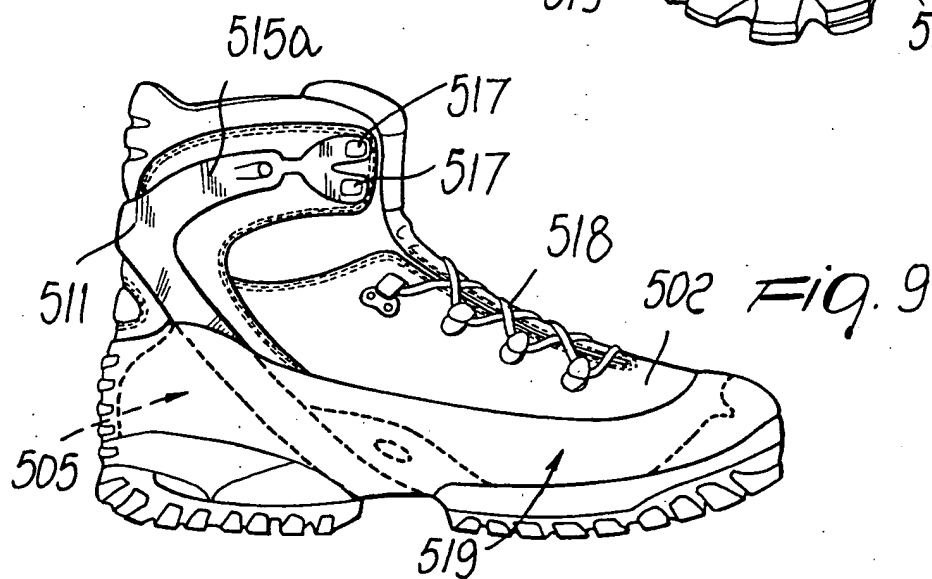
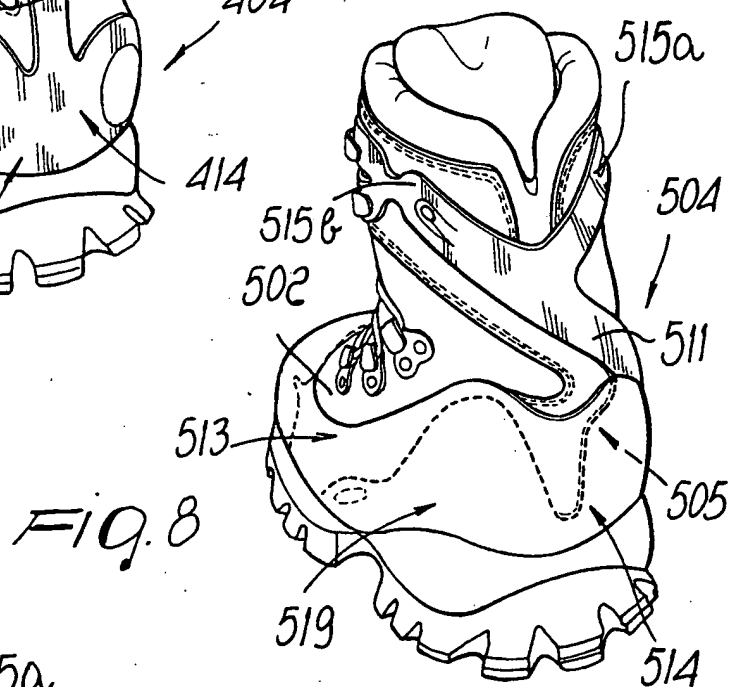
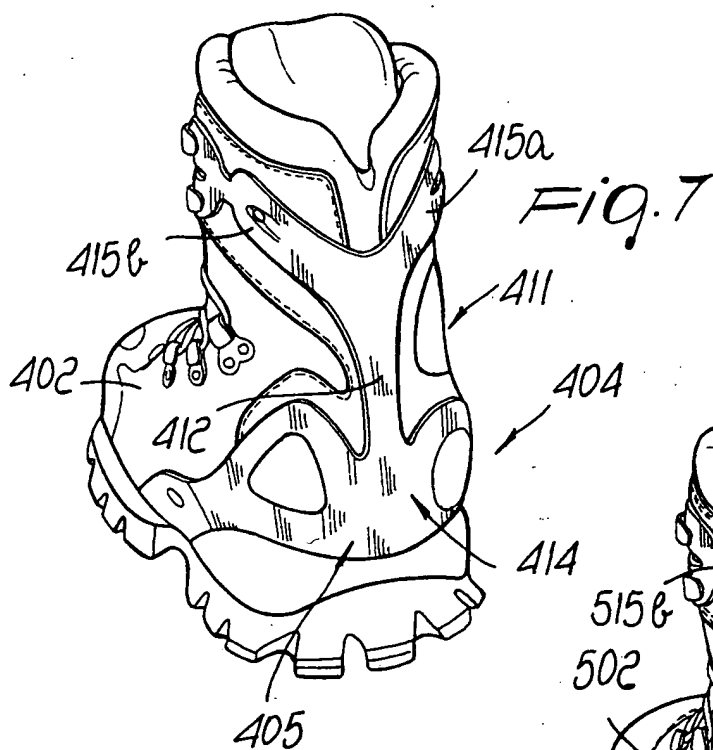


Fig. 6





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EUROPEAN SEARCH REPORT

Application Number
EP 96 10 8862

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	WO-A-94 04051 (BELL ANTHONY H G ; PRINDLE CARLE E (US)) 3 March 1994 * page 2, line 15 - page 3, line 34; figures *	1-6,10, 11,14,15	A43B5/00 A43B7/22
X	EP-A-0 149 573 (ADIDAS CHAUSSURES) 24 July 1985 * page 2, line 17 - line 27; figures *	1-3,5-7, 9,11,12, 14,15	
X	US-A-4 282 657 (ANTONIOUS ANTHONY J) 11 August 1981 * column 1, line 57 - column 2, line 2; figures *	1-3,5, 11,14,15	
X	US-A-5 269 078 (COCHRANE CHARLES R) 14 December 1993 * column 2, line 50 - line 60 * * column 4, line 40 - column 5, line 3 *	1-3,5,6, 9,15	
X	US-A-4 776 111 (CROWLEY KEVIN J) 11 October 1988 * column 3, line 48 - column 4, line 9; figures *	1-3,5-9, 11,14,15	TECHNICAL FIELDS SEARCHED (Int.Cl.6) A43B
X	US-A-4 989 350 (BUNCH RICHARD P ET AL) 5 February 1991 * column 1, line 27 - line 37; figures *	1-3,5,6, 9-11,14, 15	
X	FR-A-915 822 (CHEVRON) 19 November 1946 * page 1, line 1 - line 21; figures *	1-3,5,6, 9,11,14, 15	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23 August 1996	Examiner Scholvinck, T
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons * : member of the same patent family, corresponding document</p>			

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EUROPEAN SEARCH REPORT

Application Number
EP 96 10 8862

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X	DE-A-26 37 277 (SCHOBERTH HANNES PROF DR MED) 23 February 1978 * page 5, last paragraph - page 6, last paragraph; figures *	1-3,5,6, 11,14,15	
A	WO-A-90 04933 (ADIDAS AG) 17 May 1990 * the whole document *	1-15	
A	EP-A-0 212 032 (HECKEL SA) * abstract; figure *	1-15	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
Place of search THE HAGUE		Date of completion of the search 23 August 1996	Examiner Scholvinck, T
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document</p>			

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